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Special Article - Updating the experimental composite leading indicator of the Australian business cycle

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BACKGROUND

The ABS Experimental Composite Leading Indicator (XCLI) is a single time series designed to provide early signals of turning points in the Australian business cycle. It does not predict the level of GDP or signal recessions or recoveries. Past performance of the XCLI shows it led turning points in the business cycle by between one and six quarters, with the average being around two quarters.

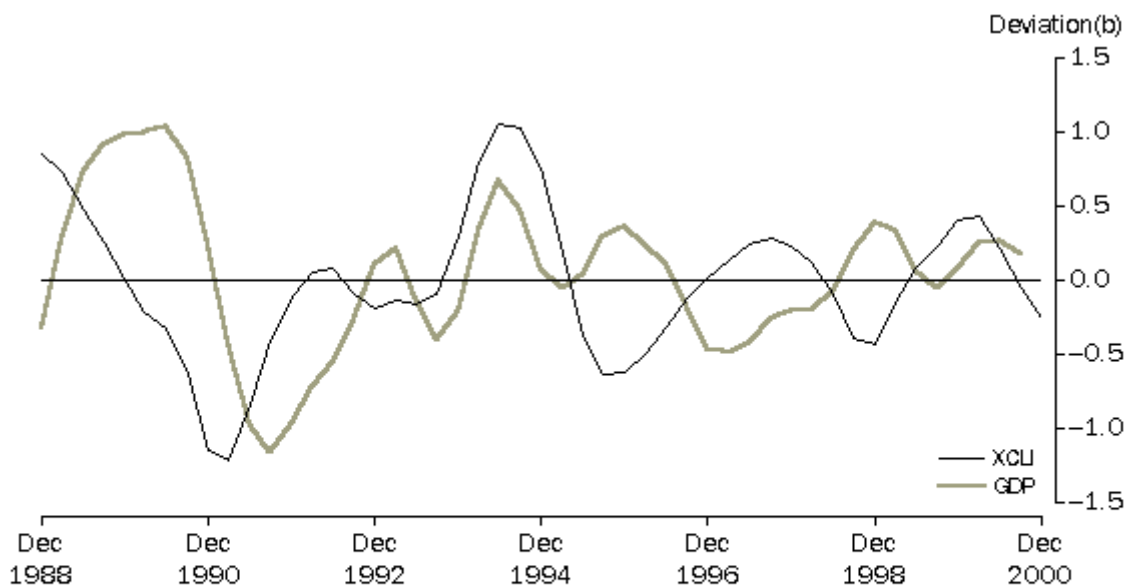
The XCLI has been developed to supplement rather than to compete with existing forms of economic analysis and forecasting. It is published each quarter in Australian Economic Indicators (in the March, June, September and December issues).

MOST RECENT MOVEMENTS

The XCLI declined in the December quarter 2000 (down 0.21 to -0.26) for the third consecutive quarter. This indicates that the XCLI peaked in the March quarter 2000 and that a peak in the GDP business cycle could be expected to emerge several quarters later. The latest data show a provisional peak in the GDP business cycle emerged in the June quarter 2000, one quarter after the peak in the XCLI, although the exact timing may be revised with future releases of GDP data.

In the December quarter 2000, the largest negative contribution to the change in the XCLI came from the housing finance component (-0.08) while the largest positive contribution came from the trade factor component (0.04) (see table 2).

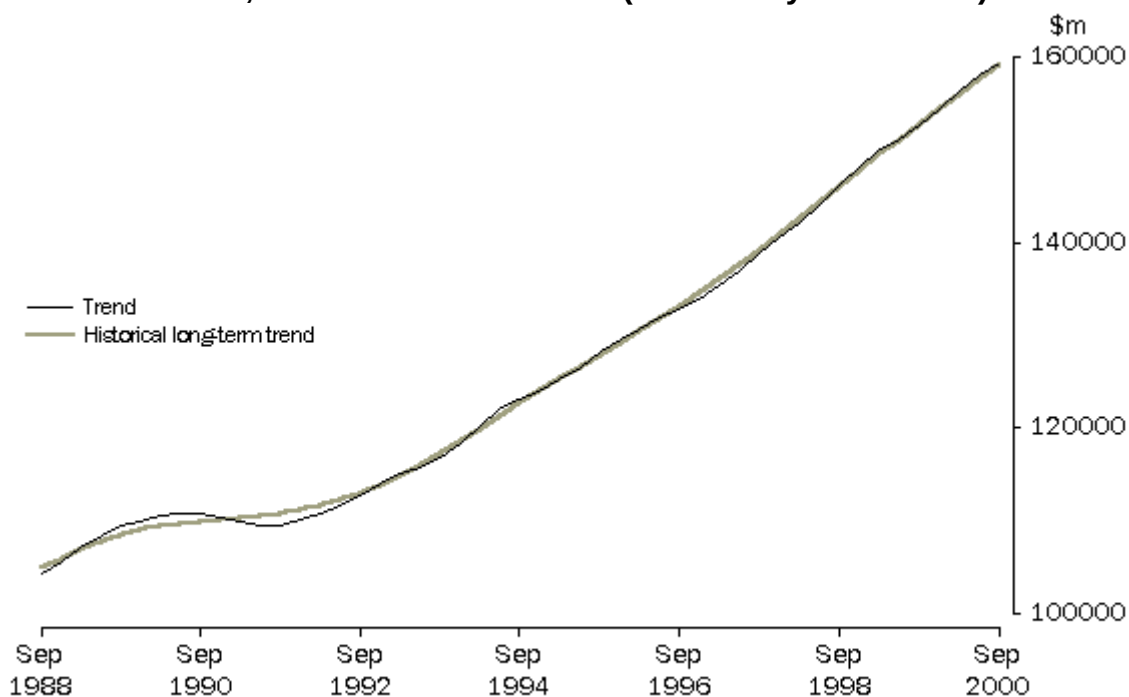
1. EXPERIMENTAL COMPOSITE LEADING INDICATOR (XCLI) AND ITS TARGET, THE BUSINESS CYCLE IN GDP **Chain volume measure (reference year 1998-99)(a)**



(a) In the September quarter 2000, the historical long-term trend growth rate of GDP is 0.97% and the trend growth rate is 0.89%.

(b) Deviation is the unit of measure for the GDP series and it refers to the deviation of trend from its historical long-term trend. The XCLI series has no official unit of measure, ie it is dimensionless. (see Endnote).

2. GDP, Chain volume measure (reference year 1998-99)



Source: ABS (Cat no. 5206.0), Quarterly data

Table 1: XCLI and GDP Chain volume measure (reference year 1998–99)

	Sep 1999	Dec 1999	Mar 2000	Jun 2000	Sep 2000	Dec 2000
Level						
XCLI	0.23	0.4	0.43	0.22	-0.05	-0.26
GDP Trend (\$m)	152,575	154,421	156,299	157,916	159,314	n.a.
GDP Long-term trend (\$m)	152,664	154,300	155,894	157,495	159,024	n.a.
GDP Business cycle	-0.06	0.08	0.26	0.27	0.18	n.a.

Movement from previous quarter

XCLI (change)	0.15	0.18	0.02	-0.21	-0.27	-0.21
GDP Trend (% change)	0.96	1.21	1.22	1.03	0.89	n.a.
GDP Long-term trend (% change)	1.1	1.07	1.03	1.03	0.97	n.a.
GDP Business cycle (change)	-0.13	0.14	0.18	0.01	-0.08	n.a.

Table 2 : Contributions to quarterly changes in the XCLI

	Sep 1999	Dec 1999	Mar 2000	Jun 2000	Sep 2000	Dec 2000
Trade factor	0.04	0.03	0.04	0.02	0.02	0.04
United States GDP	0.03	0.09	0.09	0.02	-0.03	-0.06
Housing Finance Commitments	0.08	0.00	-0.10	-0.15	-0.13	-0.08
Job Vacancies	0.05	0.06	0.03	0.03	0.02	0.00
All Industrials Index	-0.12	-0.03	0.05	-0.00	0.01	-0.01
Real interest rate (inverse lagged four quarters)	0.02	-0.03	-0.04	-0.05	-0.05	-0.02
Production expectations (lagged one quarter)	0.00	0.05	0.02	-0.02	-0.06	-0.05
Business expectations (lagged one quarter)	0.04	0.00	-0.05	-0.06	-0.06	-0.03
Total XCLI, change from previous quarter	0.15	0.18	0.02	-0.21	-0.27	-0.21

Growth in GDP trend was 0.89% in the September quarter 2000 and has been slowing since the March quarter 2000. The historical long-term trend rose by 0.97% in the September quarter 2000, the first quarter below 1.0% since June 1993, and growth has been decelerating since the June quarter 1998.

THE REFERENCE SERIES, GDP

The reference or target series for the XCLI is the GDP business cycle in Australia. The business cycle of a series is defined as the deviation between the trend and the historical long-term trend in the series. Graph 1 shows the business cycles in GDP and the XCLI. Graph 2 shows the level of trend GDP compared with its historical long-term trend.

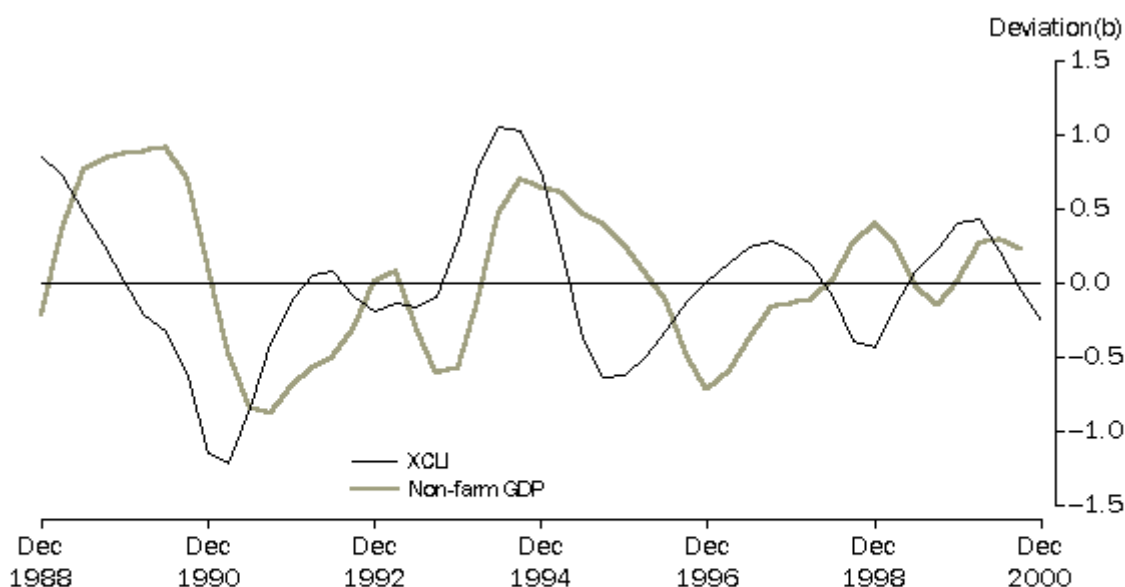
AN ALTERNATIVE REFERENCE SERIES, NON-FARM GDP

In the December quarter 1995, there was a peak in the business cycle which the XCLI failed to predict. This peak was largely attributable to the effects of a good farm season. The XCLI does not contain an indicator which leads first order farm product effects. In recognition of this, Graph 3 presents an alternative target series, namely, the business cycle of non-farm GDP, chain volume measure.

Both the non-farm and GDP business cycles peaked provisionally in the June quarter 2000. The XCLI, which recorded a peak in the March quarter 2000, led this turning point by one quarter. Also, the trend and historical long-term trend of non-farm GDP rose by the same proportion as those of GDP in the September quarter 2000 and by approximately the same proportion in the June quarter 2000. These events suggest that farm product had a negligible effect on the business cycle in the past two quarters.

3. EXPERIMENTAL COMPOSITE LEADING INDICATOR (XCLI) AND THE BUSINESS CYCLE IN NON-FARM GDP

Chain volume measure (reference year 1998-99)(a)



(a) In the September quarter 2000, the historical long-term trend growth rate of non-farm GDP is 0.97% while the trend growth rate is 0.89%.

(b) Deviation is the unit of measure for the GDP series and it refers to the deviation of trend from its historical long-term trend. The XCLI series has no official unit of measure, ie it is dimensionless (see Endnote).

ANALYSIS OF COMPONENT INDICATORS

The XCLI summarises the business cycles present in a selection of economic indicators which had typically shown turning points ahead of the business cycle in GDP from the early 1970s to the early 1990s. Because the evolution of each expansion and contraction in activity presents a unique combination of features, none of the individual component indicators has had an unvarying or perfectly stable leading relationship with GDP. However, when combined to form the XCLI their performance as a group is more stable.

In the December quarter 2000, six of the eight components made negative contributions to the quarterly change in the XCLI, one component made a positive contribution, while another made a negligible contribution (Table 2 and graph 4). Therefore, overall the XCLI was negative. Graphs 5 to 12 show each component's trend and historical long-term trend.

Negative contributions. The components making negative contributions to the quarterly change in the September quarter 2000 XCLI were housing finance commitments (-0.08, Graph 7), the US GDP (-0.06, graph 6), production expectations (-0.05, Graph 11), business expectations (-0.03, Graph 12), the real interest rate factor (-0.02, Graph 10) and the All Industrials Index (-0.01, Graph 9).

Positive contributions. The component making a positive contribution to the quarterly change in the December quarter 2000 XCLI was the trade factor (0.04, Graph 5) while the job vacancies' contribution was negligible (0.00, Graph 8).

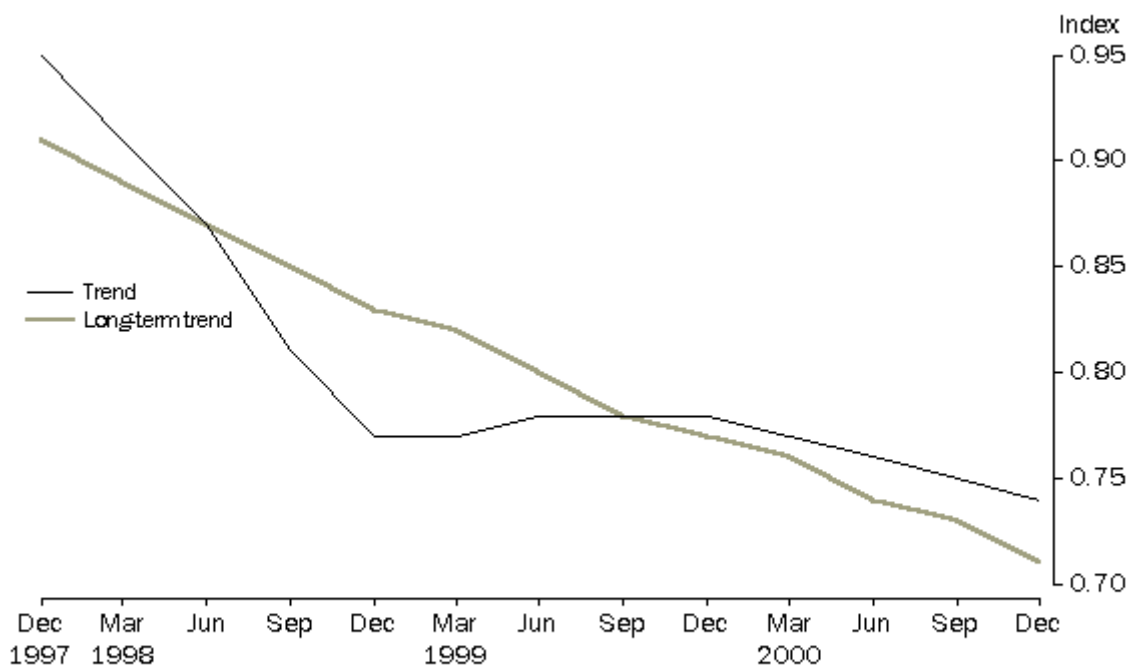
4. CONTRIBUTIONS TO QUARTERLY CHANGES IN THE XCLI



The Trade Factor

The trade factor is defined as the ratio between commodity prices in terms of Special Drawing Rights and the price index for imported materials used by Australian producers. This ratio gives an early indication of changes in the terms of trade. The trade factor trend had been declining since the June quarter 1999, whereas its historical long-term trend has been declining since the December quarter 1996. The trade factor component made a positive contribution (0.04) to the change in the XCLI in the December quarter 2000, the largest positive contribution of all its components.

5. TRADE FACTOR

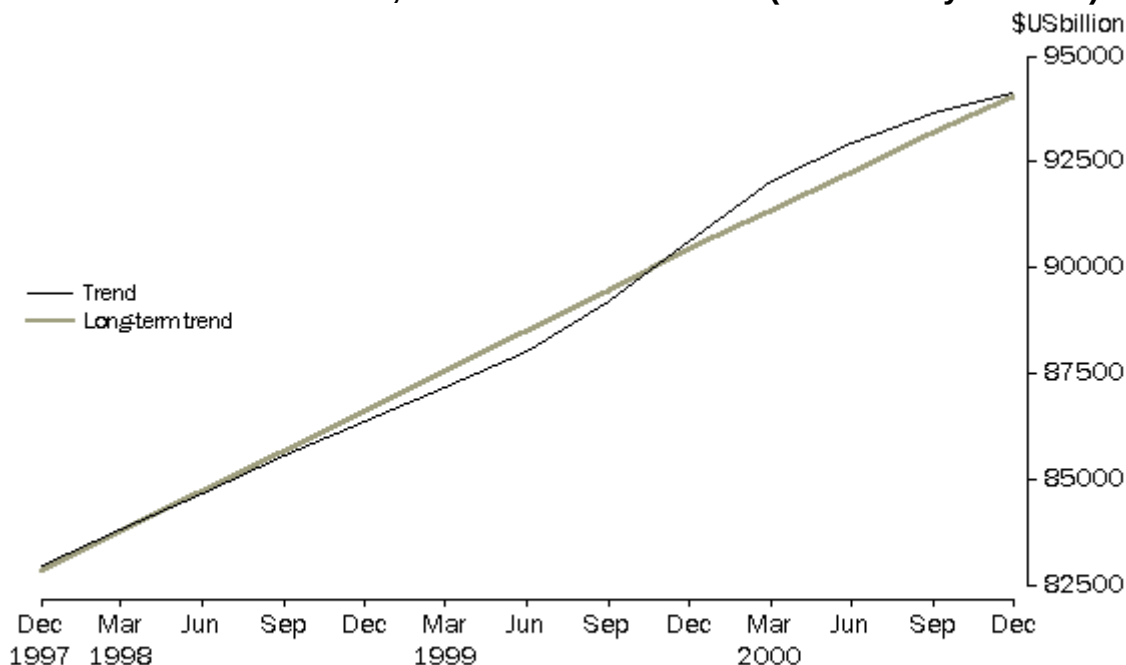


Source: ABS (Cat no. 6411.0) and RBA Bulletin.

United States GDP

The trend of United States GDP has been rising since the March quarter 1991. In the December quarter 2000, the trend continued to rise although at a decelerating rate, as it has over the past year. The long-term trend increased more strongly than the trend. Accordingly, the US GDP component made a negative contribution (-0.06) to the change in the XCLI in the December quarter 2000, the second largest negative contribution of all its components.

6. UNITED STATES GDP, Chain volume measure (Reference year 1996)



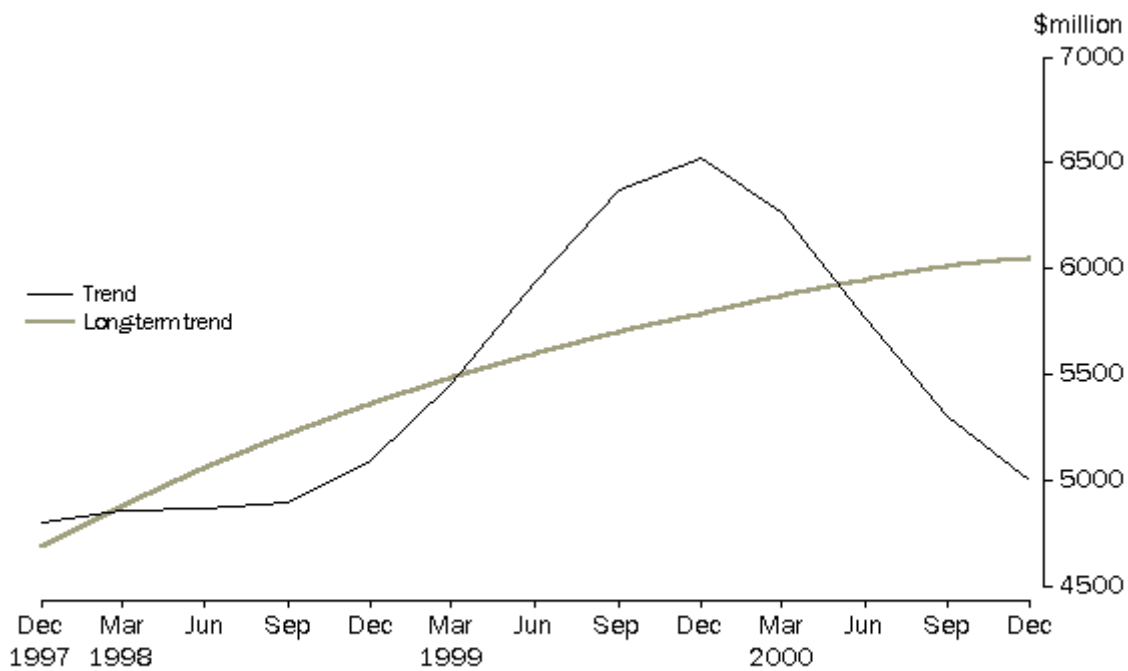
Source: US Bureau of Economic Analysis.

Secured housing finance commitments

In the December quarter 2000, the trend of the secured housing finance commitments continued to decline although at a slower rate than the past two quarters. In contrast, the historical long-term trend for secured housing finance commitments continued to rise in the December quarter 2000 although at a decelerating rate since the December quarter 1998.

The secured housing finance commitments component made a negative contribution (-0.08) to the change in the XCLI in the December quarter 2000, the largest negative contribution to the change in the XCLI of all its components.

7. SECURED HOUSING FINANCE COMMITMENTS



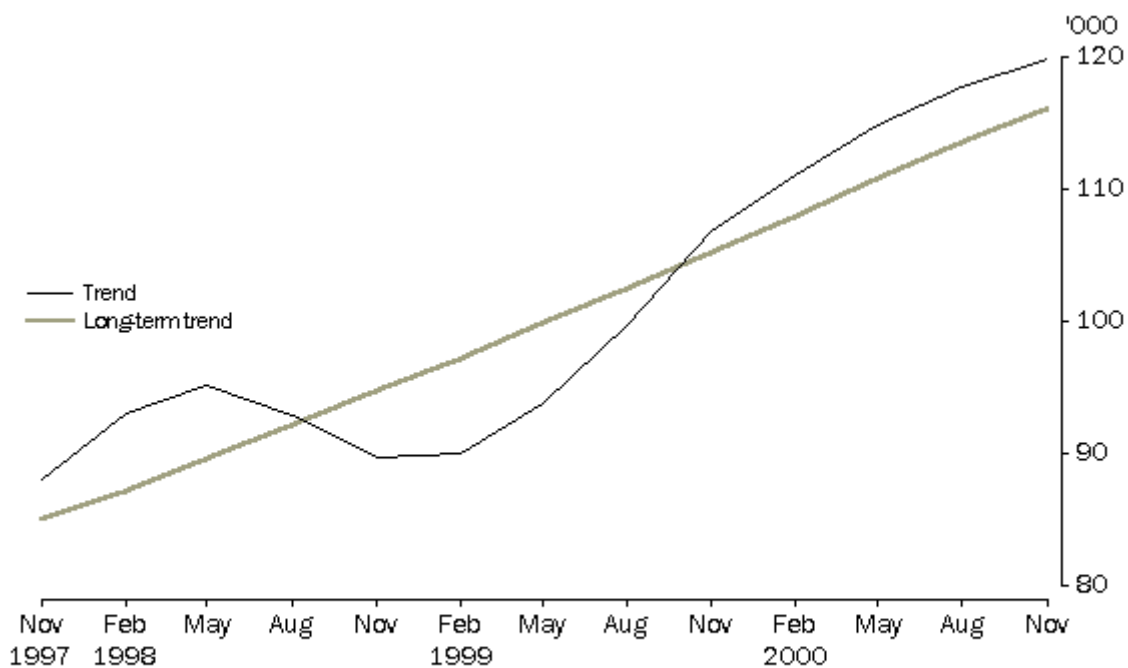
Source: ABS (Cat no. 5671.0).

Job Vacancies

Note that the job vacancies series are referenced to the middle month of a quarter.

The trend in the number of job vacancies continued to rise strongly in November 2000 although at a decelerating rate since November 1999. In contrast, the historical long-term trend has been rising at a steady rate of about 2.5% a quarter since August 1997. Job vacancies made a negligible contribution to the change in the XCLI in the December quarter 2000.

8. JOB VACANCIES

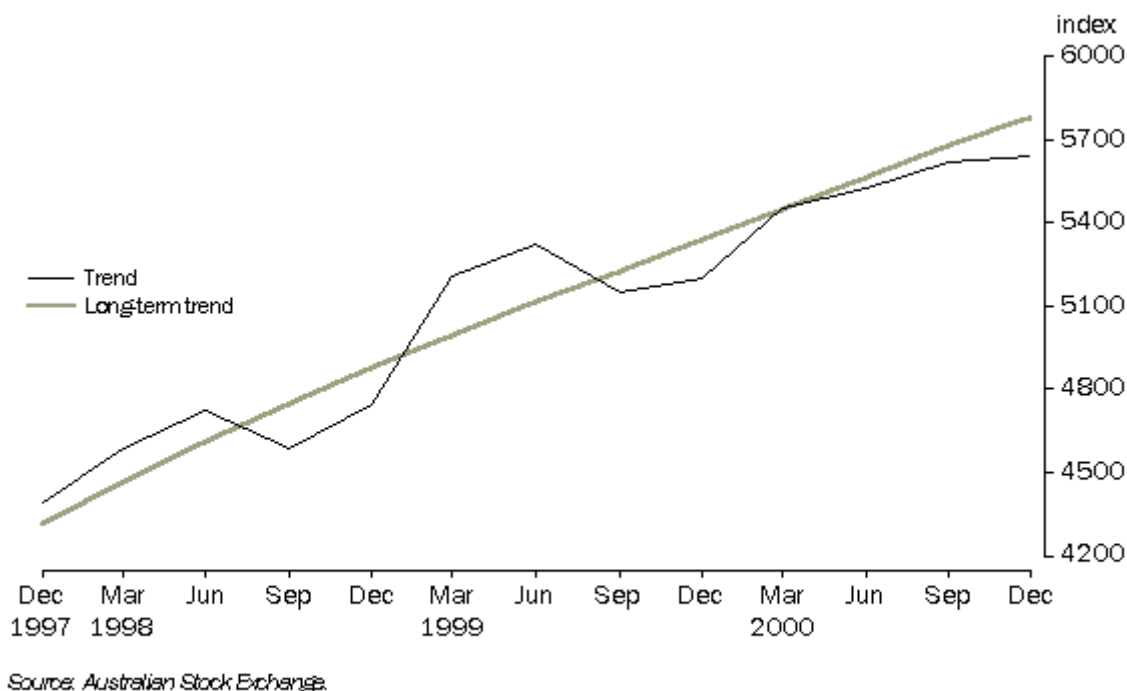


Source: ABS (Cat no. 6354.0).

All Industrials index

In the December quarter 2000, the trend of the All Industrials Index rose weakly (0.4%) while its historical long-term trend rose strongly (1.8%). The All Industrials Index component made a negative contribution (-0.01, a turnaround of 0.02 from the previous quarter) to the XCLI in the December quarter 2000.

9. ALL INDUSTRIALS INDEX

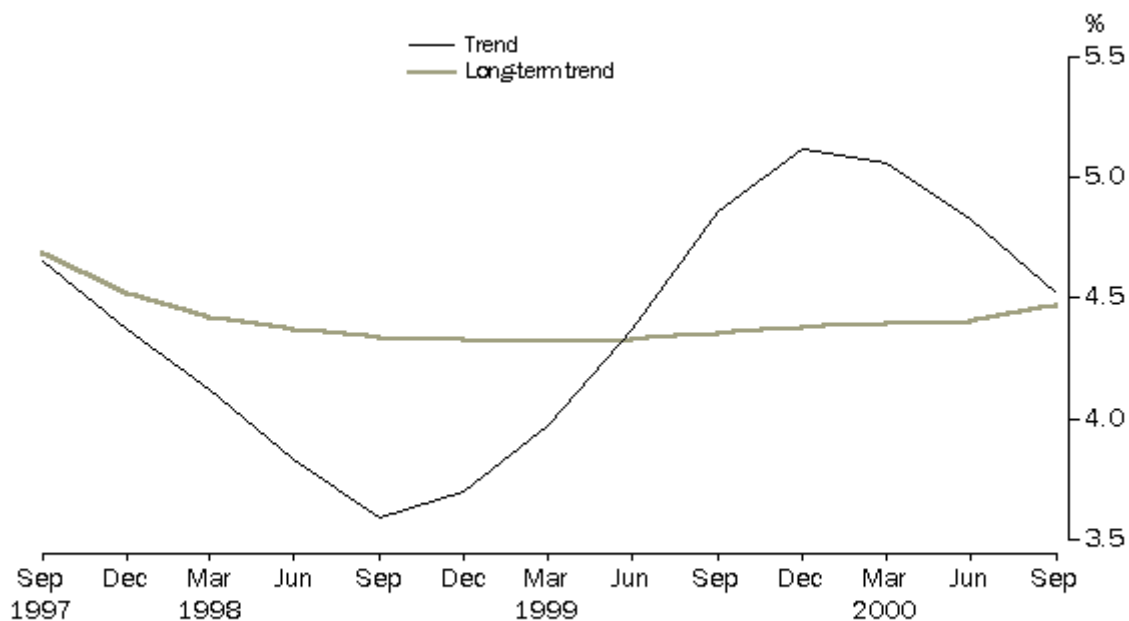


Real interest rate

The XCLI uses the inverse of the difference between the trend and the historical long-term trend of the real interest rate, lagged four quarters. Therefore, it is the December quarter 1999 movement of the real interest rate that contributes to the December quarter 2000 movement in the XCLI. The real interest rate component has continued to make negative contributions to the change in the XCLI since the September quarter 1999 (-0.02 in the current quarter).

The trend of the real interest rate began to decline in the March quarter 2000 and continued in that direction in the September quarter 2000. The real interest rate is defined as the difference between nominal interest rates and the change in the domestic final demand chain price index. An adjustment has been made to account for the impact of the new tax system on the domestic final demand chain price index. This means that the decline in real interest rates has not been as dramatic as it would have been without the adjustment. Over the last few quarters, the more rapid decline of the trend as compared to the long-term trend and its position relative to the long-term trend imply that the real interest rate component is likely to begin to make positive contributions to the change in the XCLI in the March quarter 2001.

10. REAL INTEREST RATE



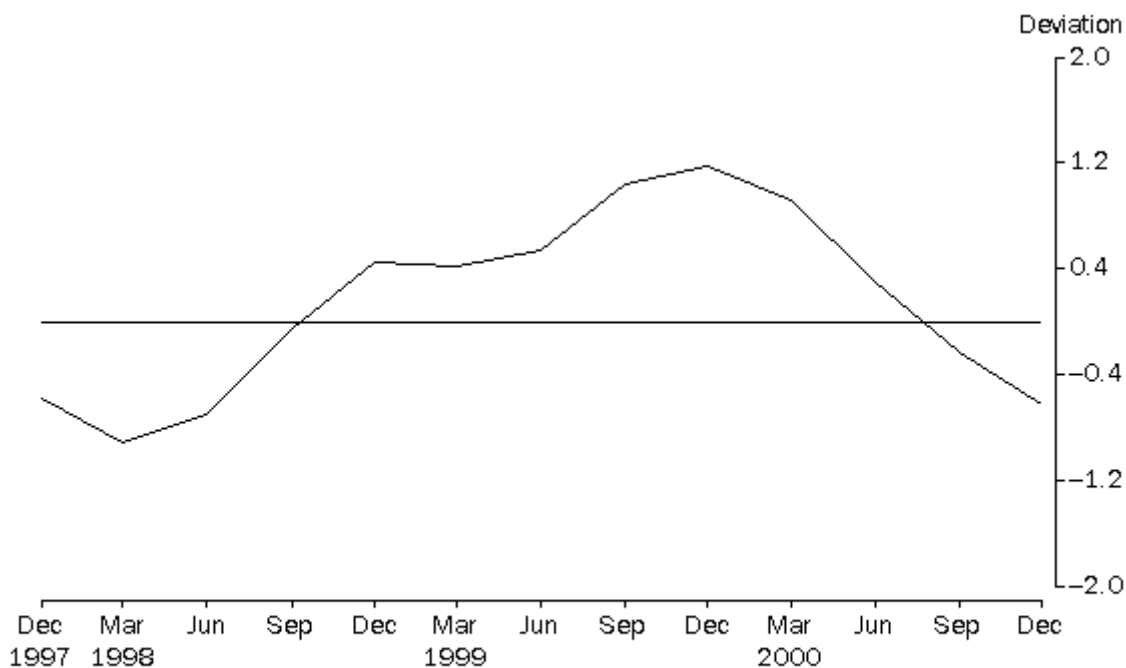
Source: ABS (Cat no. 5206.0) and Treasury.

Production and business expectations

Note: These components are lagged one quarter in the compilation of the XCLI. Like other XCLI components, the production expectations and business expectations series have been smoothed and standardised to display cyclical behaviour. However, these series are not considered to exhibit long-term trend growth.

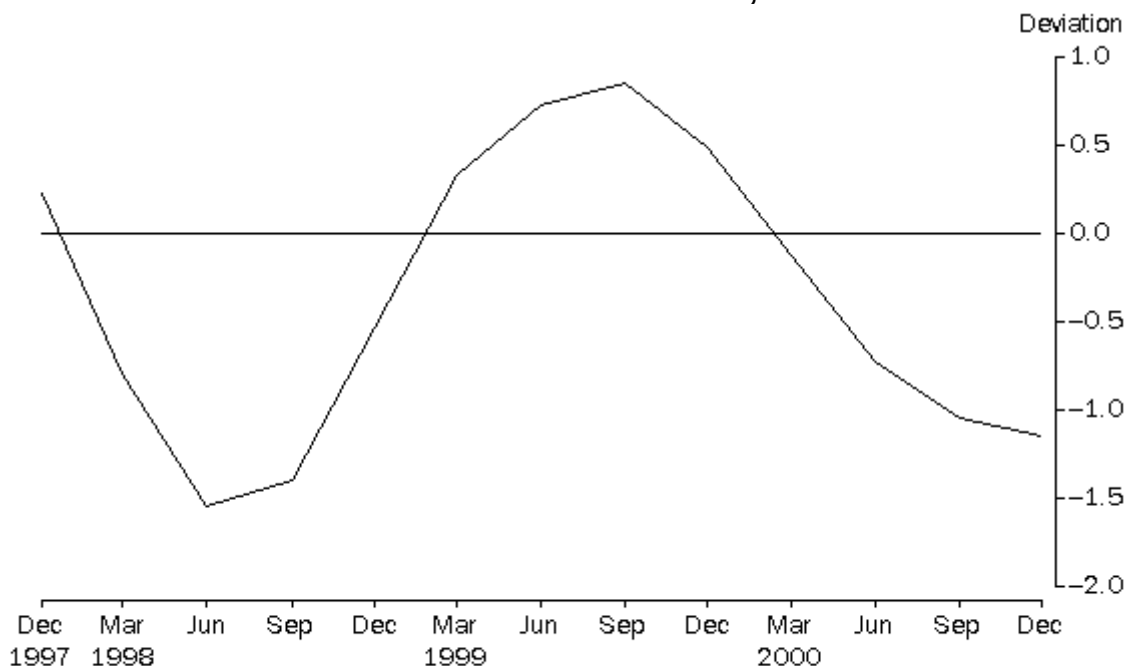
The trend of production expectations became negative in the September quarter 2000 and continued in that direction in the December quarter, following seven consecutive quarters of positive growth. According to the December quarter 2000 Survey of Industrial Trends (produced by ACCI and Westpac Banking Corporation) the slowdown of production expectations, in original terms, is partly reflecting the weakness in the housing and retail sectors originating from the distortions of spending patterns following the GST and the Olympics. Also, ACCI and Westpac Banking Corporation believes that the slowdown reflects the effects of higher interest rates, high petrol prices and uncertainty about the weak currency. This component made a negative contribution (-0.05) to the change in the XCLI in the December quarter 2000.

11. PRODUCTION EXPECTATIONS, Trend



Source: ACCI and Westpac Banking Corporation, 'Survey of Industrial Trends'.

12. BUSINESS EXPECTATIONS, Trend



Source: ACCI and Westpac Banking Corporation, 'Survey of Industrial Trends'.

The trend of business expectations has continued to decline in the December quarter 2000, although at a decelerating rate since the March quarter 2000. ACCI and Westpac Banking Corporation attributes the weakness in business confidence to the same factors as those affecting production expectations. The business expectations component made a negative contribution (-0.03) to the change in the XCLI in the December quarter 2000.

Note: The source of these expectations series is the Australian Chamber of Commerce and Industry, and Westpac Banking Corporation, Survey of Industrial Trends. The ABS also compiles business expectations data. However, the ABS data cannot yet be included as a component of

the XCLI due to the insufficient length of the time series.

LONGER TIME SERIES AND FURTHER DETAILS

Details of the compilation of the XCLI index can be found in **An Experimental Composite Leading Indicator of Australian Economic Activity**, (1347.0), June 1993, and in the feature articles published in **Australian Economic Indicators** (1350.0) in August and October 1992 and May 1993.

Longer time series of the data presented in this XCLI article are now available on AUSSTATS. For further information about these statistics please contact Costa Pappas on Canberra (02) 6252 6161.

ENDNOTE

The unit of measurement varies between XCLI components. For example, the real interest rate is measured as a percentage, job vacancies as a number, United States GDP in dollar terms and the trade factor is measured in index number form. Each component is therefore standardised to make their contributions to the XCLI comparable.

The standardisation procedure gives each XCLI component an average value of 1. The variation of each component about its average is also standardised, so that the average deviation also equals 1. Chain volume GDP (the reference series) is also standardised in the same way.

Graphs 1 and 3 use the standardised forms of the XCLI, GDP and non-farm GDP series. The graphs show the deviation of the standardised series from their respective historical long-term trends. Because of the standardisation procedure, the deviation measure has no particular unit (i.e. it is not measured in dollars, or percentage change, or any other real world unit).

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